REMARKS/ARGUMENTS

Claims 1, 3 and 6-15 are pending. No claims were amended. No new matter has been added.

Applicant notes that on page 11 of the 31 August 2006 Office Action the Examiner asserts the following:

> Applicant's amendment necessitated the new ground(s) of rejection in the Office Action. Accordingly, **THIS ACTION IS MADE FINAL.**

Applicant respectfully asserts that **no** amendments were made in the 02 August 2006 reply and thus, the finality of the instant Action is premature. Moreover, in view of the fact that the Examiner failed to recognize that no amendments were made in the previous reply, and the fact that the Examiner asserts that there are new grounds of rejection, none of which appear to have made it into the Action, Applicant respectfully submits that the instant Action does not comply with 37 CFR §1.112, which states, in part:

> After reply by applicant or patent owner (§ 1.111 or § 1.945) to a non-final action and any comments by an inter partes reexamination requester (§ 1.947), the application or the patent under reexamination will be **reconsidered and again examined** (emphasis added)

More specifically, Applicants respectfully submits that, as evidenced by the reasons set forth above for the finality of the Action and for others reasons discussed below, Applicant's papers were not properly reconsidered an again examined by the Office as required under 37 CFR §1.112. Accordingly, Applicant respectfully requests withdrawal of the finality of the instant Office Action, and reconsideration and examination of the instant reply.

Claim Rejections under 35 USC § 102

The Examiner rejected claims 1, 6, 9, 10 and 13 under 35 USC § 102 as allegedly anticipated by Perry (Chemical Engineers Handbook).

Anticipation can only be established by a single prior art reference which discloses each and every element of the claimed invention (*See, RCA Corp. v. Applied Digital Data Systems, Inc.,* 730 F.2d 1440, 1444 (Fed. Cir. 1984)). "The identical invention must be shown in as

complete detail as is contained in the patent claim" (*Richardson v. Suzuki Motor Co.,* 868 F.2d 1226, 1236 (Fed. Cir. 1989)). It is not enough, however, that the reference discloses all the claimed elements in isolation. Rather, as stated by the Federal Circuit, the cited art reference must disclose each element of the claimed invention "arranged as in the claim" (*Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

In the instant case, Applicant respectfully submits that Perry does not disclose each and every element of claim 1, *arranged as in the claim*, to maintain a rejection under 35 USC §102(b).

Applicant respectfully submits that the process of Perry is schematically described in FIG. 13-44 and includes the following steps:

1. Aqueous alcohol is introduced into separation column D. In this column, water is separated as a bottom product, whereas the top product is the azeotropic mixture of ethanol and water (96% by weight of ethanol, 4% by weight of water, B.P. 78.2° C).

2. The azeotropic mixture is introduced into column A.

3. benzene is added to the azeotropic mixture at the top section of column A.

4. The distillation process of column A yields the following products: (i) pure ethanol; which is obtained as a bottom product and (ii) a ternary azeotropic mixture composed of 18.5% by weight of ethanol, 74.1% by weight of benzene and 7.4% by weight of water as overhead product.

In relation to the instant claimed invention, then, Perry arguably describes a process wherein an A, B containing azeotrope mixture (A = water, B = ethanol) is mixed with an auxiliary H (H = benzene), which leads to the formation of Pure B (ethanol) and a ternary azeotrope mixture ABH (water, ethanol and benzene) as overhead product.

By contrast, according to instant claim 1, A, B and H form two binary azeotropes, AH and BH. In addition thereto, H is theoretically capable of forming a ternary azeotrope with A and B. Also, in the process of instant claim 1, the AH and BH containing fractions are isolated; that is, pure A or pure B are not formed. In contrast, Perry discloses the isolation of pure B (ethanol) and the formation of a ternary azeotrope.

In diagrammatic form

Present Invention	Perry reference
A,B+H	A,B+H
	
AH+BH	B+ABH

The Examiner asserts on page 9 of the 31 August 2006 Office Action that "Perry discloses two binary azeotropes (Table **13**-10, page **13**-38): AH (ethanol-benzene) and BH (water-benzene)." While Perry does appear to list ethanol-benzene and water-benzene, the disclosure is in the context of a table listing "Minimum-boiling-point Azeotropic Mixtures," not as the product of anything reading on Applicant's claimed invention. More specifically, the text of Perry in relation to the aforementioned azeotropes states:

> Many other methods have been proposed to predict azeotropic conditions. Some of these are described by Smith ("Design of Equilibrium Stage Processes," Mc-Graw-Hill, New York, 1963). Extensive tabulations of known azeotropes are presented in the volumes by Horsley ("Azeotropic Data," Advances in Chemistry Series, American Chemical Society, Washington, D.C.) Data for a few homogenous binary azeotropes are listed in Tables 13:10 and 13-11.

To reiterate, in order to reject a claim as anticipated, the Federal Circuit requires the alleged single anticipatory reference to describe each element of the claimed invention "arranged as in the claim" (*see supra*, *Connell v. Sears, Roebuck & Co.*). The mere listing of selected binary azeotropes, which happen to include the azeotropes taught in Applicant's process, fails to disclose each and every element of the instant claimed invention **as arranged in the claims**.

Further, Applicant provides the following in regard to the dependent claims that are

allegedly anticipated:

Applicant respectfully asserts that Perry discloses that benzene is obtained as an overhead product of the distillation column A and not as a bottom product, as recited in instant claim 6.

In regard to claim 9, The Examiner asserts that "Perry reference shows in table **13**-10 that the system: water-benzene forms two phases, which means the system forms a heteroazeotrope." Applicant assumes the aforementioned statement means that table 13-10 of Perry discloses a water-benzene azeotrope, said azeotrope is 2 phased thereby rendering it a heteroazeotrope and thusly, that the system of Perry forms a heteroazeotrope. As stated above, table 13-10 is merely a listing of boiling points of binary azeotropes. Applicant respectfully asserts that there is no relationship between the table, and for instance, FIG. 13-44 illustrating distillation.

Claim 10 is not anticipated for similar reasons as claim 9. Because Perry fails to disclose, as arranged in the claims, AH and BH, it fails to read on claim 10.

Claim 13 depends directly from claim 12. Claim 12 is not anticipated by Perry. Consequently, any claims depending therefrom cannot be anticipated by Perry. Therefore, the anticipation rejection of claim 13 is erroneous.

Accordingly, because Perry does not disclose the formation of two binary azeotropes AH and BH as arranged in claim 1, and only discloses the formation of Pure B and a ternary azeotrope mixture (i.e., B and ABH), Perry fails to anticipate claim 1 and those claims depending therefrom. In view thereof, the 102 rejection should be reversed.

Claim Rejections under 35 USC § 103

The Examiner rejected claims 3, 7, 8, 11 and 15 as allegedly obvious in view of Perry and claims 12 and 14 as allegedly obvious in view of Perry in light of Ohe.

Independent claim 1 stands free of *prima facie* obviousness. Claims 3, 7, 8, 11, 12, 14 and 15 depend from claim 1 and as such, also stand free of *prima facie* obviousness. As the Federal Circuit stated in *In re Fine*, "[d]ependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious" (837 F.2d at 1076). Accordingly, because *prima facie* obviousness has not been established, Applicant again respectfully requests

withdrawal of the 103 rejection.

Applicant notes that an argument similar to the one listed above was included on page 3 in the reply of the 02 August 2006 and that the Examiner failed to acknowledge said argument in the Response to Arguments section of the instant Action. The failure to acknowledge Applicant's argument provides further objective evidence that the Examiner did not comply with 37 CFR 1.112. Moreover, by failing to consider Applicant's argument, the Examiner has maintained a 103 rejection despite being inapposite to Federal Circuit rejection criteria.

Notwithstanding the above, it should be further appreciated that there is no teaching, suggestion or motivation to modify Perry to arrive at the process(es) of claims 3, 7, 8, 11 and 15. Indeed, according to the instant invention, it is generally desirous to avoid the formation of the ternary azeotrope ABH because such formation can negatively affect successful separation (See page 5, lines 21-33). This is accomplished by introducing at least a part of the auxiliary H at the top and/or the upper region of a column, as described in the Applicant's examples.

While Perry describes introducing benzene via a top region of a distillation column, Perry nonetheless, discloses the formation of ternary azeotropes. The Examiner, in the Response to Arguments section, page 10 of the 31 August 2006 Office Action, fails to acknowledge this distinction. The Examiner's statement regarding the availability of computers does alter this distinction nor does it render Applicant's argument moot.

Further, an advantage of the claimed process(es) is that they generally require fewer separation columns when compared with the processes described by Perry (*see*, Fig. 13-44). Indeed, in Perry, because the overhead product of column A is a ternary azeotrope, in order to isolate the second product (water), a second column (column D) is required.

The Examiner asserts that one of ordinary skill "could reduce the number of separation columns at the cost of product quality" (the 31 August 2006 Office Action, page 10). Applicant respectfully asserts that the Examiner has employed an improper obviousness standard. To establish *prima facie* obviousness, the Examiner must show in the prior art some suggestion or motivation to make the claimed invention, a reasonable expectation for success in doing so, and a teaching or suggestion of each claim element (*See, e.g., In re Fine*, 837 F.2d 1071 (Fed. Cir.

1988); *In re Jones*, 958 F.2d 347 (Fed. Cir. 1992); ***In re Merck & Co., Inc.,*** 800 F.2d 1091 (Fed. Cir. 1986); *In re Royka,* 490 F.2d 981 (CCPA 1974)). Moreover, because as the Examiner asserts, Perry discloses 100% pure product, one of ordinary skill in the art would **not** be motivated to modify a process to reduce the number of separation columns and sacrifice the 100% purity. If however, contrary to Applicants assertions above, the Examiner has personal information not of record used to establish the motivation to reduce purity in a process designed for 100% purity, Applicant respectfully requests an Examiner's affidavit, as set forth in MPEP 1.104(d)(2), indicating the use of personal knowledge and allowance for Applicant to respond to said personal knowledge.

Accordingly, a person having ordinary skill in the art at the time the invention was made would not have been motivated to modify Perry and choose the auxiliary H so that it formed two binary azeotropes with the components to be separated and/or recognize that its introduction at the top region of the column prevented the formation of a ternary azeotrope. Likewise, specifically with regard to claim 11, one having skill in the art would not have recognized from Perry that the use of water as auxiliary H did not lead to the formation of a ternary azeotrope.

For at least the reasons expressed above, it is urged that the art references cited by the Examiner, either singly or in combination, fail to teach suggest or disclose the present invention as defined by the claims. Accordingly, a *prima facie* case of obviousness has not been established by the Examiner and the rejection under 35 USC § 103 should be withdrawn. Favorable action is solicited.

Conclusion

Applicants respectfully submit that the present application is in condition for allowance, which action is courteously requested. Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account 14.1437. Please credit any excess fees to such account.

Respectfully submitted,
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